LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES DIVISION

VEGETATION CONTROL PLAN

WALLACE LAKE
DeSoto and Caddo Parishes

Prepared by:
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District 10
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1. Waterbody type – Impounded swamp along Wallace Bayou constructed for flood control.

2. Age and condition of control structure (if applicable) – Dam completed in December of 1946.

3. Type of control structure – Earth-fill dam 4,300 feet long with a crest width of 20 feet at elevation 176 feet >MSL. A reinforced concrete overflow spillway 644 feet in length is located in the dam near the south abutment. The spillway crest is at elevation 158 feet >MSL. Outlet works consist of four uncontrolled rectangular conduits, each 8.25 feet wide and 3 feet high at an elevation of 142 MSL. Wooden stop logs are used to prevent dewatering below 142 MSL.

4. Water level range (MSL) – Pool stage 142 feet MSL. High level is 158 feet MSL. Low level is 142 feet MSL with stop logs in place, 140 feet MSL if stop logs are removed.

5. Surface area range – Surface area at pool stage is 2,300 acres. Surface area at flood stage is 9,300 acres. Surface acreage at low stage of 140 feet > MSL is 1,530 acres.

6. Average depth –3.4 feet at pool stage.

7. Watershed ratio – 75:1.

8. Drawdown potential of structure – Drawdown capability is two feet.

9. Waterbody Board or Lake Commission –
Creation / Nomination – The following information is taken from the USACE website http://www.mvk.usace.army.mil/Missions/Recreation/WallaceLake.aspx /

   Wallace Lake Dam is managed by the USACE. The Flood Control Act approved June 22, 1936 (Public Law 738, 74th Congress), as amended by acts approved June 28, 1938 (Public Law 761, 75 Congress, 3rd session) and June 28, 1939 (Public Law 154, 76th Congress, 1st session) authorized the construction of Wallace Lake Dam.

   Wallace Lake was created for the purpose of flood control. This original congressional authorization was limited to flood control only. Most recent authorization includes multi-purpose functions such as Natural Resource Management, Environmental Stewardship and Public Recreation as well as Flood Damage Reduction.

   a. Primary contact information – U.S. Army Corps of Engineers, Bayou Bodcau, 1700 Bodcau Dam Rd., Haughton, LA 71037. Phone: 318-949-1804.
   b. Procedure for spillway openings – Spillway operation is under the control of USACE. In the case of this lake, spillway operation would consist of removing the wooden stop logs from the control structure. For the purpose of vegetation control, LDWF would contact USACE to request such operation.

USACE owns in fee title approximately 463 acres at the control structure site with the majority of the lake bottom owned by private individuals.

No typical drawdowns have been conducted on Wallace Lake due to the limited two foot capability of the control structure. However, water level fluctuations within that two foot range were utilized to strand and desiccate aquatic vegetation during year 2012.

What significant stakeholders use the lake?
User groups include anglers, boaters, waterfowl hunters and shoreline property owners. The primary user of the lake is USACE as a flood control mechanism. No potable water intakes are located at Wallace Lake.

What are their needs and concerns?
Anglers and shoreline property owners are concerned with angler and boater access as well as the aesthetic aspect of the lake. There are no recorded concerns stated by USACE. It should be restated here that the original purpose of the lake was flood control with multi-purpose usage added to the authorization for the overall project. Some shoreline property owners and anglers have expressed concerns related to aquatic vegetation as it often restricts boater and angler access.

What is the history of aquatic vegetation complaints?
Aquatic vegetation complaints at this lake are chronic. Historic vegetation complaints at Wallace Lake have evolved from those concerning water hyacinth to almost exclusively those involving giant salvinia. Complaints regarding both water hyacinth and giant salvinia are lake-wide.

Have there been any controversial issues on the lake?
LDWF files indicate no controversies related to this lake.

Aquatic Vegetation Status:

Water Hyacinth- Historically, water hyacinth has been the predominant aquatic plant species at Wallace Lake. Water hyacinth remains problematic and likely will be so in the future although competition from giant salvinia has caused a significant reduction in coverage.

Giant Salvinia- The invasive species has become increasingly problematic in recent years. Heavy rains and hard freezes occurring in 2010 reduced the amount of giant salvinia found in the spring of 2011. By July 2011, giant salvinia coverage had increased to earlier levels. In 2012, the majority of Wallace Lake was covered by giant salvinia.

Swamp marigold- This plant has established itself at Wallace Lake by growing on matted giant salvinia. Swamp marigold is present throughout the lake and is layered upon the salvinia mats so that both plants are found occupying the same vertical space above the water surface. This plant has extensive roots that serve to bind giant salvinia together causing unusual difficulty for boat traffic.

Alligator Weed- Commonly found as a fringe along the entire shoreline of Wallace Lake as well as in scattered shallow areas offshore.

Duckweed-Typically found on the upper one-third of the lake and often results in total coverage of the water surface in that area.

As of January 1, 2013, the coverage of problematic aquatic plant species was estimated to be:
Giant salvinia (*Salvinia molesta*)-1,500 acres.
Alligator weed (*Alternanthera philoxeroides*)-90 acres.
Water hyacinth *(Eichhornia crassipes)*-5 acres.
Swamp marigold *(Bidens sp.)*- 500 acres.

Limitations:

- The primary purpose of Wallace Lake is to provide flood storage and downstream flood control. Recreational fishing is a peripheral use of the impounded swamp.
- The control structure has limited value as a management tool for dewatering from pool stage.
- Dense trees, shallow water, and thick mats of vegetation make herbicide applications particularly difficult.
- A railroad trestle spans the lower end of Wallace Lake. The trestle pilings are an obstacle to movement of floating aquatic vegetation.

Past Control Measures:

The primary aquatic plant control method used at Wallace Lake in the past has been foliar herbicide application by boat mounted spray equipment. Water hyacinth has been treated with 2,4-D at a rate of 0.5 gallons per acre. Giant salvinia and duckweed has been treated with diquat at a rate of 0.75 gallons per acre. Alligator weed and other emergent species have been treated with glyphosate at a rate of 0.75 gallons per acre. During 2012, one LDWF spray crew was dedicated to Wallace and Clear-Smithport Lakes. Historical herbicide applications made by LDWF appear in Table1.

Table 1. Wallace Lake herbicide applications 2005 – 2012.

Year	Acres Treated	Vegetation
2005	66	Water Hyacinth
2006	220	Water Hyacinth, Pennywort, Giant Salvinia, Alligator Weed
2007	247.5	Water Hyacinth, Giant Salvinia
2008	680.76	Water Hyacinth, Giant Salvinia, Duckweed, Alligator Weed
2009	1234.1	Water Hyacinth, Giant Salvinia, Duckweed, Alligator Weed, Pennywort, American Lotus
2010	2668.69	Giant Salvinia, Alligator Weed, Pennywort, Cutgrass, Frog's Bit, American Lotus,
2011	353.2	Giant Salvinia, Water Hyacinth, Alligator Weed, Duckweed, Mosquito fern, Pennywort
2012	1,008	Giant Salvinia, Alligator weed, Water Hyacinth, Water Lily

The Caddo Parish Police Jury (CPPJ) worked to provide improvements to the boat ramps during 2102. The Wallace Lake Road Boat Ramp was dredged to allow low water access. CPPJ also constructed a coffer dam at the Norris Ferry Boat Ramp which allowed for boat ramp repair. The coffer dam was removed and the ramp was reopened.

In 2012, LDWF initiated a series of repeated lowerings of the lake to the extent allowed by the structure in an effort both strand and flush giant salvinia. LDWF crews closely monitored the lake level and removed or replaced the stop logs in the control structure to facilitate some control of giant salvinia. Additionally, LDWF crew monitored the railroad trestle to control blockage by logs and vegetation. These efforts have resulted in establishing at least minimal open water areas in Wallace Lake.

Removing two feet of water from elevation 142 > MSL results in a 33.5% reduction of the surface acreage of Wallace Lake from 2,300 acres to 1,530 acres. The 770 acres exposed by a two foot drop in lake level constitute the more problematic areas of the lake for aquatic vegetation.

Giant salvinia weevils have been introduced at Wallace Lake to provide a biological control agent for giant salvinia. In October 2008, 46 cubic feet of host plant material containing giant salvinia weevils was placed into the lake. In August 2011, approximately 6,000 individual weevils were stocked. In May 2012, approximately 15,000 adult weevils were released. In September 2012, 58,400 adult weevils were stocked. To date, approximately 80,000 giant salvinia weevils have been placed into Wallace Lake. These weevils were released into areas that are difficult to reach with spray equipment.

Foliar herbicide applications have been the primary control measure at Wallace Lake for many years. Results have been disappointing. Most recently, an aggressive treatment effort was conducted in an effort to achieve significant progress with this chronic problem. Herbicide treatments in 2012 were made to 1,008 acres, or 44% of the Wallace Lake surface area. Despite the effort, aquatic plant coverage remained at 2000 acres, or 87%.

Recommendations:

Aquatic vegetation in Wallace Lake is a particularly difficult issue. Wallace Lake is a USACE flood control project and an impounded cypress swamp. Characteristics inherent to Wallace Lake are primary contributors to the aquatic vegetation problem. The dense cypress forest and shallow water provides ideal habitat for invasive aquatic vegetation and greatly limits access to boat mounted spray equipment.

After extended efforts and a critical review, it is clear that herbicide treatments are not an effective aquatic vegetation control measure for Wallace Lake. Future foliar herbicide applications should be limited to the immediate vicinity of access points. The intent of the limited applications will be as a measure to reduce the spread of invasive plants to other waters.

Annual releases of giant salvinia weevils are recommended for the control of giant salvinia. Early introductions will allow the weevils to reproduce and spread throughout the entire growing season.

The limited drawdown capacity of Wallace Lake reduces potential benefits from water level manipulation. However, benefits can be achieved from even limited water fluctuation. To that end, frequent drawdowns to maximum capacity of the control structure are recommended as a control measure for floating aquatic vegetation. Drawdowns are normally confined to periods with cooler water due to concerns related to fish kills. However, conditions dictate that water fluctuation be conducted on Wallace Lake routinely throughout the year.

Typemap

Wallace Lake was surveyed for aquatic vegetation coverage in April of 2012. The typemap generated by this survey appears in Figure 1.

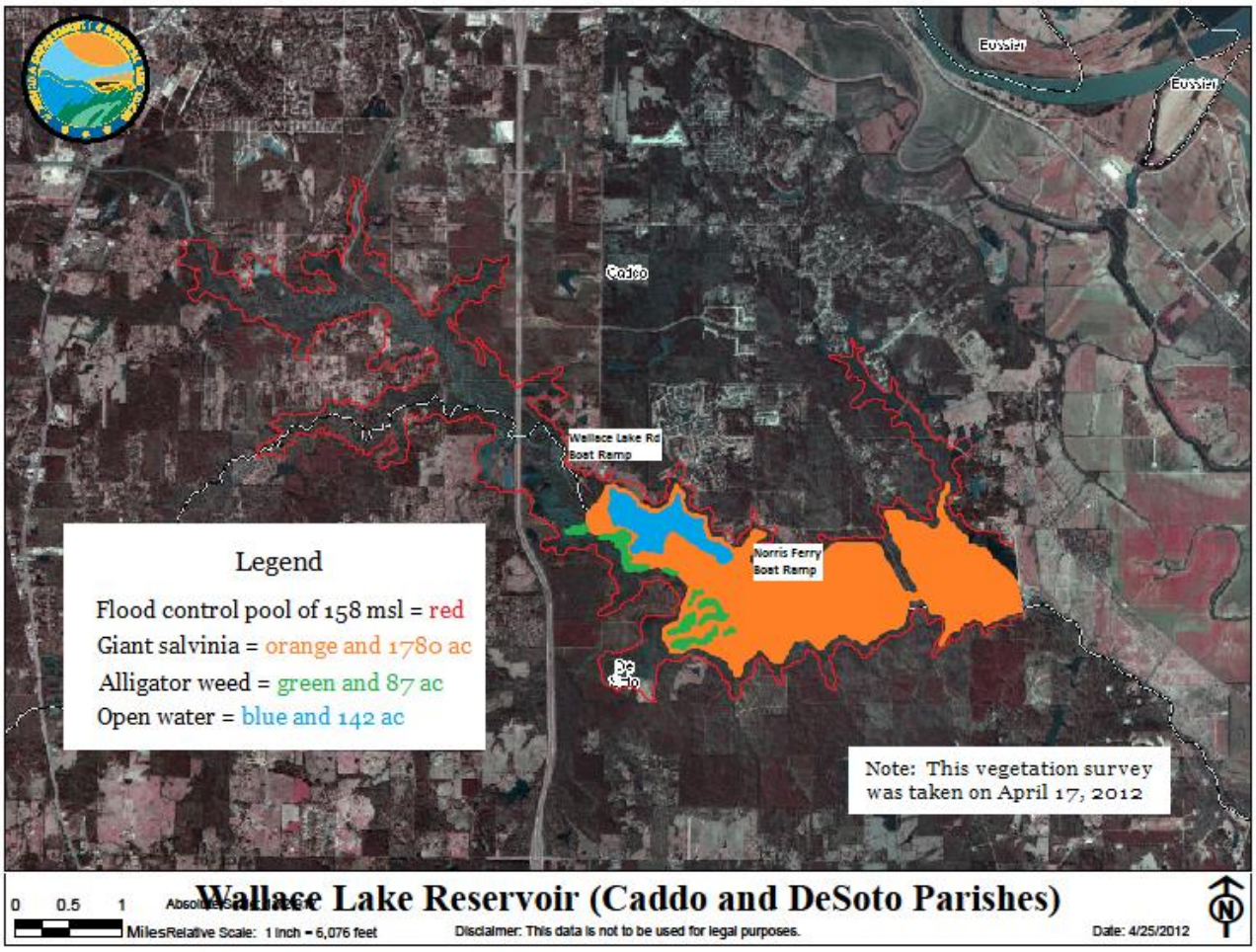

Figure 1 Typemap of Wallace Lake, Caddo and DeSoto Parishes, Louisiana. Survey conducted April 17, 2012.